

FIG. 1A

1 TCGGGAAANGATTGATTTGGCCNCTCGGNAAGGCNTTTTATTTTGCNNCAAGGAGGGCCCGGGGGTTTCCAACCNAAATAAAATT 87
 88 TTTTTCGGATCCCGGGGGTTTCTCAGGGAGTTGGGAATTTTACTTTGAAAGCAGATNTTTCNGAGNTCCGGGTAGCTNTCCAAT 174
 175 AACTNTTTGTATCATTTGCCAGACGGCAGATCAAGGATGCCTTCGGTTTACCCGTGCTGTTTCAGAGAACGGCTTTTGAAGATTGAT 261
 262 TTTAAGTTATTTAACAGTCACAGACAGGTGTATNTTGGAGAATAGAGGCAAGTCCGCGGTGAGGGATGAAGCAGGAGAGATAGGG 348
 349 GAAGGCAGACAGGACTGCTGGGCAAGGAAGCTGTGCTGATTTGAGCACAGTGGAATTCACGTACGCAATTTCAAAGGCTTTAGTG 435
 436 GTAAATTTCTGAAGCTCAGATGCAGGCAAGACCCAAGAGGATAGTGTACACAGAGAGAAGAGGGTCNTCAGGATCGTGCGTAGAGTG 522
 523 AGAGAGCCCCAAAGGCAGGAGGGAAGAGCCTCAGTGGAATTTACTTAGGGATGAGGGAGAGAAGAAAAAGGTTCTTGCAAGGTGTGGG 609
 610 GTCTTCCAAATTCAGGAGTTCACTGAACTATAGAGAAGGTGTAGCGGGTGAAGGGGCCATGTGATGAGGATGGCAAGCAAGGCTGT 696
 697 GCGCAGATGACGAGATGCCTGGGTGCGGAGGTCAGGGGAGACCCAGGATTTGGGGTACCTGTGTCTGCGCAGAGGGGAAGCCACCC 783
 784 TGCAACTGGCCAGCACTGAGTCCAGAGGAAATGAGGCAGAGGACAAACCAGAGCTTCGGAGACTAAGTCAGGTAGGGCGCGGGC 870
 871 GGAGCGTGAGGAGGGCAGCGGACCGGAGAGGCNTCGAAGGCCACCGGACCCGCTCCGAGAGTCTGAGGGCCCTGCCACACCT 957
 958 GCGRGGCCCCCTCCCCAGAGGCCACACTCCAAGGCCACCTAGAACCCGTCTGTCTGTCTCAAGCCCTTGCAAAAGACGTCTGCGCAG 1044
 1045 AGGGGGCGTGGCAGGCGTGTGTCACCTCAGGCGTGTAGCCAATCCACGAGTGCGCCCTCCCGGAGAGGGTGGCGGAGGGCCC 1131
 1132 GCGCGCGCGCCACCGCGGTGTGAGGAGGCCAGGCTGGCGGGTCCCTCCGCGCGGCGAGCCTTGCCAGGTAACCGGGTTCCGCGG 1218
 1219 GAGGCTGGGGTTCGCGCAGCCCCCTCGCTCCCTGGGAGGCGTGACACTGCCGCGGCGGGTCCCGTGTGGGCGGAGGCCGCTGCG 1305
 1306 CGCGTCGACCGACGGGCGCAGCCTGTGGGCGGGTTCGCTGCGTGACGGGCGGCGTCCCGCGCTTGTGTAGGCCTGCCGCGG 1392
 1393 GAAAGCTCGGCGAACCAGAGGTGTCCAGGTCCGCGCGTGCAGGCTGCGCGGGTTCGCGGGCGCAGGCGGCGGTGGGCGGGGT 1479
 1480 CGTCCCGAGGAGCTCTTTGTTCGCGCGCGCTGAGGGCGGAGCCTACCCCGCGCGCGCGCGCTCAGTCCCGCGCGCGGTTC 1566
 1567 GCGCGCAGGAGCTGCCACCGGTCCCGCTGGCCTCCCGCGCGCGCGCACCGCCTCCGCGCTCCGCGCGCGCGGTTC 1653
 1654 GTCGCGGAGGTGCTGTCAGCATGGGNGCGTCGCGACCCCTGCGCCAACGGCTGCGGGCTGGCGCACCTCCGAAGCCGAGGTGC 1740

M A ? V A T P C A N G C G P G A P S E A E V L

1741 TGCACCTCTGCCGAGCCTCGAGGTGGGCACCGTCATGACTTTGTCTACTCCAAGAAGTCGAGCGGCCAGAACGGAAGANCTTC 1827
 H L C R S L E V G T V M T L F Y S K K S Q R P E R K ? F Q

1828 AGGTCAAGTTGGAGACGCGCCAGATCACATGGAGCCGCGCGGACAAAATCGAGGGTCCAGTAAGTGCAGCCCACTCCGGCCTG 1914
 V K L E T R Q I T W S R G A D K I E G S S K C A P L R P A

1915 CCTCGCGCCTGCCGCGCTCCCAAACACTTGGGCAAACTTTGGGGCTCGCGCTGGCGCCCCGTCTCCGCCCAGTCCCTGGTGGTCA 2001
 S R L P A S Q T L G Q T F G P R A W R P V S A Q S L V V T

2002 CTCTGGGGCGGGTGGAGGGGGCATCCGGTCTTGGATCACCTGATAGGACACCCCTCCCCAGTAGGGGGGAGTGTTCAGGCA 2088
 L G R V E G G I R V L D H L I G H P L P Q *

2089 CTTTGCCCTGAGGCCTAAGAGTCCTCACTGGTGGACAAGTGGAGTGGGATTCGGGCCCTTAGCATCGGGCGGCTGTCACTGGCTGT 2175
 2176 GAGGGGAAGCCAAGACAGGGACCCCTCATCAACCTGAGAACCTGGGAACCGACAAGATCTTCTGCCCACTGCCATTTCTCCAG 2262
 2263 AGTGTGCTGTCTGTGAAACTCCTAAGAGCTCCGGGATGGGCTTATTTGGCGCAAGAACCTTTGGAATCCTCATGTAGAACTTAGGCA 2349
 2350 GATGTTGGGGTAGGGCTGGTGGTGAAGCAGAGCCCTACTCATCTCCCTCTTCTTTGGGAGGATGGGGTATGAAAGCTAAACCGTG 2436
 2437 ACTGCTTCCCTCCCATGTCCCGTGGATGGGTTTTTTTTTTTTTTTTTTTGGCCCCAGATCTGAATTTTGGAGGTCCATGGTGCTA 2523
 2524 GGCAGCCATCCAAAGCTAGAGCCATGGCTCCTTTGCCCTGACAGCATATAACAAGGAGCTTGCAATTCAGAAAGGTTCCCTGGCCTTG 2610

FIG. 1B

2611 GGT TTTGGGGTCCAGCCCTTTGTGTTGGATGTTCTCGTGACCACAGGGTAGCCCANAGTTGCTCCTCTGGTTTCCTGTCGTACCCCT 2697
2698 CCCAAACCTGAGTGTGGTGGGTTTACACACAAGTCTCTGGTGGGAGAAGTAAGTCAGGAGTTTGTAGAAACCTCGGCTCTTTGTGAT 2784
2785 AGTCATTTTCCTCGGTGTGAGGCAGGATGAGGAGTCTTTGCAACTCCAGGCTTTGAGATGTTTCTTACAAGAACCCCAAAGAGTCT 2871
2872 ATGGTTGAAGGGACCTAGCCTAAGAGCCAGGTCTGTGTTAGAGAAGGGGGGGTGGTGTGAGGAAGTAACAACGGCGAGAAGGTCCCA 2958
2959 CAGATCTTCCTGGGGATGGTGTACATGTGTGTCGATGGGTGAGGAGATGAGGAGGAAGGAAGGTTTCTGTGGTAAGACAGCCATCCT 3045
3046 CAACTACAACTTCAGGTCTGACAGAATTGGCCCTTAACCATCACCAGTGCCCATCAGCCCTGGCCTCCGCTGGAAGAACATTTTCAG 3132
3133 TGATTTTCAGTGTGGGGGATGGAAGTGCAGACAGTTCCGGTAGTCTTGAGACATCACTCAGACATCAGGTGTCAGGCATGGCATT 3219
3220 TACGTTTGTAGTATTTCTGTGTTAAGTGGTGGCATTAGTTCCCGGTAGCTAGCTCTTGGTAACAGCTGCACTGTAAACCGTGTG 3306
3307 TGTAGCCAGTAGTGGAAGATAGCTATGGTATTTGAAGCCAGTGTGTTAGCTGTACGTCACCCAGCCAGGTGCTTTCCCTCTCGGAG 3393
3394 CCTCGGTTTCCTCTGTAAGTTAGCAGAAGTATATTTACTATAAATGGTCACTTTTGGAAAGTGAGATAGTTGGTGTAAAGTAAGCAAAC 3480
3481 TAAATATGTAATAGATGCGAGCAGACGTTACAGAAGTTAAGAACCAGTTATTAGTAGCAGTAGCTATGGTAGATGCTTGTCTC 3567
3568 CTAGACCCCTGGGATGGGGCTTCGAGGGAGGTCTAATGTGGCTGTTAGAAAAAGAAAGGGCTCTGAGGGAGGAGGGCCGAGAGAGGG 3654
3655 TCCCGTTCTCCTTAATTGCATTACCCAGGATAAAAGAGGAACTCTTGTGTTTGGCGTACATCGTTTACCCTTCTGTTACCTGTGCAT 3741
3742 GTAAGATGAGTTTCTATGTTTGGAAATTTGTACATTGGATGCCATTGTGAGTTGGGGCTGGACAGAAAGAGGGACTTAGAGACAG 3828
3829 AACCATCCAGTCCGTTTGTCTCACTTGGGTCTTTGAGGATGGGTGGCAGGAATACAGAGGACGTCACCTTTCCAGACCCAGAAAAG 3915
3916 TCACCCAGAGATATGCATGTTTTCATTGGGCCCGACCCTGTGATTTTGGGGTCCAGAATGAAGGCTGCAGACTAGCCTGTGTGGAC 4002
4003 TTCATACCTTGTAATGGAGCCCACCACCGAAGCCCTGCCCCACTTCTGCTGGAATGCACCTCACTGCCTTTGTGGGTTCCCAAACC 4089
4090 TGCAGCCTCCTGCAGATTGTGAAAGGCTTGAGTTGCCAGCTCCCTCCCTACTGTCTGGTCTCTTGTTCAGATGCCTCAGGTATTTG 4176
4177 ACTTTTGTCTGATAACCTTATCCCTACCTGAAGCCAGGCCAGAGAGAAAGACTGCCGCTGTCTGCCCTCAGGCTGCTACGGAACAC 4263
4264 AACGACAGGCTGACTGCCATTTCTTAAATCTTGAGTTCTCTCACTGTGACACCTGTGAACTAGTTAGCACCTTCTGATGTCTAAGG 4350
4351 CAGCGGTCTACTTGAGAAGTGCTTTGGTGTGTTTGGTGTGTGACTGAAGTCAGGCTGGTGTCTGGCATTATGTTGCAGAATTTA 4437
4438 GTGAGTTAAAGCAGCCATAGACTTCCTGCCAGTGCTAAACAGACTTTTCACTCTGCTGCAGGCTAGTCCCTCAGAGGACTCTGCTC 4524
4525 CCAGGTGTGTTGGTGGTAGGCCCTGGTCTCCTGTTTCTGTAGCCTTTGTTGCCCTTGTGAAGAGAAACCTCCATGTTTAGGTGG 4611
4612 TATTTACAGGCAGAGACCTCCATCTTCATCAAAGACGCCTTCCTAGGCTTTCCATATGTAATGCCTGTAGTGAGATGGCTCAGACCT 4698
4699 ATTCTTCGTGAGGTTGTCCAGTTAAGGACCACTGTTGGCATAAGTAGCTCCAGTAGAGACTCTAAAGCTATGTTGTTATTTGTGGTGAG 4785
4786 GATTGCAGTACCAAGGGGCTGGCTCTGAGAGTAGGTCCGTGGCACCTAAGAATTGTCTGCACATGTCCCTCAAGGATTCCTTTTNGC 4872
4873 TGGCCCACAGTGAGAGAGCAGCAGAAAGCATGCGCCTGGATCTAAGAAAGGTTAATGAAACCATGGTACCTATGGGAGCTTTACAAC 4959
4960 CTGGGCTTCTGTCTCCGGTAGCCATTTCTAAAGANATTATGAAATTGTGGTAGATTGAAAGATGTTCTTACTATTCTCTTACATC 5046
5047 CTGAGGATCACGAAAGATTGCTTTCAGTATTCCTACTATTAATTTTAAAGAACCCTATGAAAGATATCAATGGACAGTTCTTCCAC 5133
5134 AAGGCATGGCTAATAATCCTACCTTATGTCAAANTTGTGGCACAACCAATTCACCTGTGAGACACAATGACTATGACTACTCNCNTG 5220
5221 ATGATGATGANGATGATGAGAT 5307
5308 TTNCTTAAATTAACNNCCNCGAAAAGATTAAACCCGAAAGGTCACCGATCTATATTTNGTTTAANTNATACCGTTTCCCAAAT 5394
5395 TTNCGGACCTNAANTTTNATCAATTTGTNTATGNTCCCC 5434

FIG. 2A

CCTCGCTCCTTCCCTCCTTCCCTCCTCCCTCCGGGTAATTAATTCTAGCTTCAGGCCAAGGCCACACAAGGAAGAAATCCACAGGGGATTAGATGCCGGGTGTTAAC
 120
 TCCACCAGCTAGGTGGACTCTGCAGCCAACCTCCTATCAGATCACCTCGCACTATTTCCGACCCGACCGGAATGCACTGGCTTGAGGTCCAGCCCTTTCCGCTGGCGGGAGCAGA
 240
 GCCCGGAAGCTGCTTGGAGTTGGATGGGGTAGGAAGGGCTGGACGGGAATCTACGATGCCAACTGGCTGGCCCTAAGTTGGGCAATATGAGATTGCAGAGACATCCAGCGTTT
 360
 10
 M E L Q R T S S V S
 CAGGGCCGCTGTCCGCGGCCCTACACCGGGCAGGTGCCCTTACAACCTACCAACCACTGGAGGAAGATTCAACAGCTCCCAAGATGAGCGTGAAGCTGTACAGAAGAAGACCTTCACCAAGI
 480
 G P L S P A Y T G Q V P Y N Y N Q L E G R F K Q L Q
 GGGTCAATTCCACCTTGCAGAGTGTCTGCCGAATCACAGACCTGTACCGGACCTTCGAGATGGACGGATGCTCATCAAGCTACTGGAGGTCCCTCTCTGGAGAGAGGCTGCCCTAAAC
 600
 V N S H L A R V S C R I T D L Y T D L R D G R M L I K L L E V L S G E R L P K P
 CCACTAAGGACCGGATCCGATCCACTGTCTGGAGAAATGCGACAAGGCTCTTCAATTCCTGAAAGCAGCAGAGTCCATCTTGAGAACATGGGCTCCCATGACATTTCTGGATGGAACCC
 720
 T K G R M R I H C L E N V D K A L Q F L K E Q R V H * L E N M G S H D I V D G N H
 ACCGGCTGACCTCGGCTCATCTGGACAATATTCTGGCTTCCAGATCCAGGATATTAGTGTGGAGACTGAAGATAACAAAGAGAAAAGTCTGCTAAGGATGCAATTGCTGCTGCTGGT
 840
 R L T L G L I W T I I L R F Q I Q D I S V E T E D M K E K K S A K D A L L L W C
 GCCAGATGAACACAGCTGGGTACCCCAATGTCAACATTCACCAATTCACCTAGCTGGAGGATGGCATGGCCCTCAATGCACGTGATACATAAAACATCGGGCTGACCTGATAGATTTTG
 960
 G M K T A G Y P N V N I H N F T T S W R D G M A F M A L I H K H R P D L I D F D
 ATAACTGAAGAAATCTAATGCACACTACATCTGCAGATGCAATTAACCTGGCAGACGACCACTTGGCCCTCACTAACTGTAGACCCCTGAAGATATCATGCTGTGGACCACTCATG
 1080
 K L K K S N A H Y N L Q N A F N L A E Q H L G L T K L L D P E D I S V D H P D E
 AGAAGTCTATCATACGTGTGACTTACTACCACTACTTCTCCAAGATGAAGCCCTTGGCTGTCCAGGAAGCGCATTTGGAAAGGTGCTTGATAATGCTATAGAAAACAGAGAAAA
 1200
 K S I I T Y V V T Y Y H Y F S K M K A L A V E G K R I G K V L D N A I E T E K M
 TGATTGAGAAGTACGAGACACTTGTCTGACCTTCTGAGTGGATTGAACAAACCATCATCATCTTAACCAACCCGAAATTTGCTAATTCACCTGTTGGGGTCCAACAGCAGCTCCAAG
 1320
 I E K Y E T L A S D, L L E W I E Q T I I L N N R K F A N S L V G V Q Q L Q A
 CATTCAACACGTACCGCACACTGGAGAAACCCTAAGTTTACTGAGAAGGGGAATTTGAGGTGCTCCTTTTCGCCATTTCAGAGCAAGATGCCGACCAATAATCAGAAGGTCTACATGC
 1440
 F N T Y R T V E K P P K F T E K G N L E V L L F A I Q S K M R A N N Q K V Y M P
 CCGCGAGGGGAAGCTCATCTTGACATCAACAAGCCTGGGAAGACTGGAAAAGCAGAAACATGAGAGACAATGGCTCTCGGGAATGAGCTCATACGGCAGCAAAAACCTGGAACAAC
 1560
 R E G K L I S D I N K A W E R L E K A E H E R E L E L R N E L I R Q E K L E Q L
 TCGCCGAAGATTGTATCGCAAGCCAGCTATGAGGAGACATGGCTGAGTGAACCAAGCGTCTTGTCTCAGGACAACCTTTGGATTTCACCTTCCCGCTGTGAGGCTGTACCAAAA
 1680
 A R R F D R K A A M R E T W L S E N Q R L V S Q D M F G F D L P A V F A A T K K K 450

FIG. 2B

AACACGAGCCCATTTGAGACAGACATCGCTGCATATGAAGACGAGTTTCAGGCCGCTGCTGGCCAGGGAACTTGAAGCCGAGAACTACCATGCATCAAGCCGATCACAGCGAGGA 1800
 H E A I E T D I A A Y E E R V Q A V V A V A R E L E A E N Y H D I K R I T A R K 490
 AGGACAAATGTCGGCTCTGGGAATACTCTGCTGGAACCTGCTCAGGCCAGGAGCGACCGCTCTTGAGATGAACCTGGGATTGCAAAAGATATCCAGGAATGCTTTATATATATGGACT 1920
 D N V I R L W E Y L L E L R A R R Q R L E M N L G L Q K I F Q E M L Y I M D W 530
 GGATGGATCAATGAAGTGCTATTGCTCTCAAGACTATGGCAACACTTACTTGGTGTGAACACCTGTTACAGAAGCATGCCCTGGTTGAAGCAGACATGCAATCCAGCAGACC 2040
 M D E M K V L L L S Q D Y G K H L L G V E D L L Q K H A L V E A D I A I Q A E R 570
 GTGTAAAGGGTGAATGCTCTGCCAGAAAGTTTCCAACAGATGGGGAAGCTACAAGCATGTACACCCCAAGTAATTCGAGACCGTGTGGCCACATGGAGTTCTGCTATCAAGACC 2160
 U R G V N A S A Q K F A T D G E G Y K P C D P Q V I R D R V A H M E F C Y Q E L 610
 TTTTTCAGCTGGCTGCCAGCGTAGGGCTCGCTGGAAGATCCCGTCCGCTCTGGAAGTTCTTCTGGGAGATGGCAGAAGAGGCTGGATACGAGAGGAAAGATCCCTGTCT 2280
 C Q L A A E R R A R L E E S R R L W K F F W E M A E E G W I R E K E K I L S S 650
 CTGATGATTACGGAAAGACTTGACCACTGTATGCGCTCTGTCAGCAAGCACCGGGCAATTTGAGGATGAGATGAGTGCCCGTAGTGCCCATTTTGAGCAGCGCCATTAAAGAAGGTGAAG 2400
 D D Y G K D L T S V M R L L S K H R A F E D E M S G R S G H F E Q A I K E G E D 690
 ACATGATTGCAGAGAACACTTTGGATCGGAAAGATCCCGTGAGAGAAATCATTTATATCCGGGAGCAGTGGGCCAACCTGGAACAGCTCTCAGCCATTAGGAAGCGCCCTAGAGGAAG 2520
 M I A E E H R G S E K I R E R I I Y I R E Q W A N L E Q L S A I R K K R L E E E 730
 CCTCATTACTGCACAGTTCCAGGCTGATCTGATGATATATGATGTTGGATTGATCAAGATTGTCTCCACCAATGATGTGGCCCATGATGAGTACTCCACGCACTCTCTGG 2640
 S L L H Q F Q A D A D I D A W M L D I L K I V S S N D V G H D E Y S T Q S L V 770
 TCAAGAAGCATAAAGATGTAGCAGAAGATCACCAACTGCAGGCCCACTATTGACACACTGATGAGCAAGCCAGTGCCTTCCACAAGCACATGCAGAGTCTCCAGATGTGAAGGCC 2760
 K K H K D V A E E I T N O R P T I D T L H E Q A S A L P Q A H A E S P D V K G R 810
 GGCTGGCAGGAATTGAGGAGCGCTGAAGAGATGGCAGATTAACGGCTAAGGAAGCAGGTCTGCAGGACACCCCTGGCCCTGTACAAGATGTTCAAGTGTTCAGTGAGGCTGATCCCTGTGAGC 2880
 L A G I E E R C K E M A E L T R L R K Q A L Q D T L A L Y K M F S E A D A C E L 850
 TCTGGATTGACGAGAGGAGCGCTCAACATGTCAGATCCCAAGAGAGCTGGAGGACCTGGAAGTATCCAGCACAGATTTGAGACCTTAGAACCAAGAAATGAACAACCAAGCCTT 3000
 W I D E K E Q W L N N M Q I P E K L E D L E V I Q H R F E S L E P E M N N Q A S 890
 CCCCCGTTGCTGTGTGAACCAATTCACGGCAGCTGATCCACAATGGCCACCCCACTGAAGAAATCAGAGCTCAGCAAGACAAACTCAACACGAGGTGGAGTCAGTTCAGAGAAC 3120
 R V A V V N Q I A R Q L M H N G H P S E K E I R A Q Q D K L N T R W S Q F R E L 930
 TGGTGCAGAGAAAGATGCTTCTGTCTGCCCTGAGCATCCAGAACTCCACCTGGAGTGAATGAACCAATCTCTGCATCCGGGAGAGACCAAGTCAAGTCACTGAGTCTACCCAAG 3240
 V D R J J D A K K S A K S U Q N Y H L E C N E T K S C I R E K T K V I E S T Q D 970

21
CZ
G
L

ACCTTGGCAATGACCTGGCAGGTGTCTATGGCCCTTCAGCTGCGAAGCTGAGTACCTGCGAAGAAAGCTGAGAAGCTGG 3360
L G N D L A G V M A L Q [C] X L T G M E R D L V A I E A K L S D L Q K E A A K L E 1010
AGTCCGAGCACCCTGACAGGCTCAAGTATCCTGTCTCGGCTGGCCGAGATCAGTGATGTGTGGAGGAATGAAGACACACCTGAAGAACCGAGAGGCTCCTCGGAGAGGCCAGCA 3480
S E H P D Q A Q A I L S R L A E I S D V W E E M K T T L K N R E A S L G E A S K 1050
AGTGCAGCAGTTTCTGCGGAGCTTGCAGCAGCTTCCAGGACCCAGACTGCTATCGCCTCAGAGGACATGCCCAATACCTCCTACTGAGGCGAGAGAAGCTTCTCACAC 3600
L Q Q F L R D L D F Q S W L S R T Q T A I A S E D M P N T L T E A E K L L T Q 1090
AGCAGCAGAATATCAAAAATGAGATCGACAATATGAGGAAGACTACCAAGAGATGCGGAGACATGGCGGAGATGGTCAACCCAGGGGCAGACTGATGCCACAGTATATGTTTCTCGCGGCAGC 3720
H E N I K N E I D N Y E E D Y Q K M R D M G E M V T Q G Q T D A Q Y M F L R Q R 1130
GGCTGCAGGCTTAGACACTGGCTGGAATGAGCTCCACAAAATGTGGGAGACAGGCCAAAACCTCTCTCCAGTCCCTACCCAGAGTTCTTACGGGACACCAACAAGCTGAAG 3840
L Q A L D T G W N E L H K M W E N R Q N L L S Q S H A Y Q Q F L R D T K Q A E A 1170
CTTTTCTTAATACCAGAGTATGTTTGGCTCATCTGAATGCCACCAACCTGGAAGGAGCTGAAGCAGCCATTAAGCAGGAGGACTTCATGACCAACCATGGATGCCAAGCAGG 3960
F L N N Q E Y V L A H T E M P T T L E G A E A I K K Q E D F M T T M D A N E E 1210
AGAGATCAATGCTGTTGTGGAGACTGGCCGAAGACTGGTGAGCGATGGGAACATCACTCCGACCGCATCCAGGAGAAGGTGGACTCTATTGACGACACAGGAGAATCGAGAAG 4080
K I N A V V E T G R R L V S D G N I N S D R I Q E K V D S I D D R H R K N R E [A] 1250
CAGCCAGTGAACTTCTGATGAGTTAAAGGACAACCGTGATCTACAGAAGTTCTCGCAAGATTGTCAAGAGCTGTCCCTCTGGATCAAIAGAAAGATGCTTACAGCTCAAGACATGTCTT 4200
A S E L L M R L K D N R D L Q K F L Q D C Q E L S L W I N E K M L T A Q D M S Y 1290
ATGATGAAGCCAGAAAATGCGACAGTAAATGGTTAAGCATCAAGCATTTATGGCGGAACCTTCATCCACAAAGAAATGGCTTGACAAAATTGACAAGGAAGCAATGCACTTATTTTCAG 4320
D E A R N L H S K W L K H Q A F M A E L A S N K E W L D K I E K E G M Q L I S E 1330
AAAAGCCAGAAACAGAGCTGTGTAAGGAAAAAAGTCACTGTTTACATAAAATGTGGGAAGTCTTGAATCCACACCCAGACCAAGGCCACGGCTCTTGTATGCAAAATAAGGCTG 4440
K P E T E A V V K 'E K L T G L H K M W E V L E S T T W T K A W R L F D A N K A E 1370
AGCTTTTCACACAAGCTGCCAGATCTTGACAAATGGCTACATGGCCTGGAGAGCCAGATTCAATCTGACGACTATGCAAGCAAGCACTTATTAGTGTCAATATCTTCTTGAAAGGCAAC 4560
L F T Q S C A D L D K W L H G L E [S] O T W S D D Y G K [D] L T [S] O N T L L K K [Q] [Q] 1410
AGATGCTGCAGATCAGATGAAGTTGGAAGAAAGAGATCGAGGAACCTGACAGGCGGCTGAGTCAAGAGGGGAAGAGCACAGATGAGGTGCACAGCAACCGCTTACTG 4680
[M] L E N Q M E [O] R [K] K E [I] E E L Q S Q A Q A L [S] [Q] E [G] K S T D E [V] D S K R L T V 1450
TGCAGACCAAGTTTCATGAGCTTCTGGAGCCCTTGAGTGAGAGGAAGCATACCTGTGTAGCTTCCAGGAGATCCATCAGTTCAACAGGGATGTGGAGGACGAAATTCCTATGGGTGGCG 4800
Q T K F M E L L E P L [S] E R K H N L L A S K E I H Q F N R D V E D E I L W V G F 1490

FIG. 2D

AGAGGATGCCTTTGGCAACTTCCACAGATCATGGCCATAACCTTCAAACTGTGCAGCTGTTAATAAAGAAAAACCAGACCCCTCCAGAAAGAAATCCAGGGACACCAGCCTCGTATTGATG 4920
 R M P L **A** T S T D H G H N L Q T V Q L L I K K N Q T L Q K E I Q G H Q P R I D D 1530
 ACATCTTTGAGAGGAGTCAAAACATCATCACAGATAGCAGCAGCCCTCAATGCCGAGGCTATCAGGCAGAGGCTCGCTGACCTGAAGCAGCTGTGGGGCTCCTCATTTGAGGAAACTGAGA 5040
 I F E R S Q N I **I** T D S S S L **N** A E A I R Q R L A D L K Q L W G L L I E E T E K 1570
 AACGCCATAGACGGCTGGAGGAGCCACACAAGCGGCAGCAGTACTACTTTGATGCAGCTGAAGCCGAGGATGGATGAGTGAACAGGAGTTGTACATGATGTCTGAGGAAAGGCCAAGG 5160
 R H R R L E E A H **K** A Q Q Y Y F D A A E A E A W M S E Q E L Y M M S E **E K A K D** 1610
 ATGACGAGTGTCTCTATGTTGAATAAGCACCACGATTTTAGACCAAGCTTTGAGGACTATGCAGACACAGTACACCAGCTCTCCAAGACTAGCCGGCGCTGGTGGCTGACAGCC 5280
 E Q S A V S M L K K H Q I L E Q A V E D Y A E T V H Q L S K T S R A L V A D S H 1650
 ATCCGAAAGTGAGCGTATTAGCATGGCGCAGTCAAGCTCGACAGCTGTATGCTGGCCTGAAGACCTTGCTGAGGACAGGAGAGAAACTTCATGATGAGAGGCACAGGCTGTTCCAGC 5400
 P E S E R I S M R Q S K V D K L Y A G L K D L A E E R R G K L D E R H R L F Q L 1690
 TCAACAGAGGTTGATGACCTGGAACAGTGGATCGCTGAGAGGGAAGTGGTCGAGGCTCCCATGAGTTGGACAGGACTATGAGCATGTACAGTGTTCACAGAACGGTTCGAGAAT 5520
 N R E V D D L E Q W I A E R E V V A G S H E L G Q D Y E H V T M L Q E R F R E F 1730
 TTGCTCGACACAGGAAACATTTGGCAGGAGCGTGTGGATACAGTTAATAACATGGCCAGATGAACACTCATCAACTCTGGACATTCAGATGCTGCCACCATGCTGATGAGTGAAGATGGTC 5640
 A R D T G N I G O E R V D T V N **N M** A D E L I N S G H S D A A T I A E W K D G L 1770
 TCAATGAACCTGGGTGACCTCTGAGGCTCATTTGACACAGATTTCTGCTGCCCATATGAACCTTACATGATGCCAAGAGATCTTTGGCCGAATCCAGG 5760
 N E A W A D L L E L I D T R T Q I L A A S Y E L H K F Y H D A K E I F G R I Q D 1810
 ACAACACAAGAACTCCCTGAGGAGCTTGAAGAGATCAAAACACTGTGGAACCTTACAGAGAATGCACACCACCTTTGACCACGACATCCCAAGCTCTGGGCACCTCAGGTGAGCAGC 5880
 K H K K L P E E L G R D Q N T V E T L Q R M H T T F E H D I Q A L G T Q V R Q L 1850
 TGCAGGAGGATGCAGCTGCCCTCAGGCAGCCTATGCAGGGACAAGCTGATGACATCCAGAGCGTGAGATGAGGTCTCTGGAAGCTTGAAGTCCCTGCTGGATGCTTGTGAGGTC 6000
 Q E D A A R L Q A A Y A G D K A D D I Q K R E N E V L E A W K S L L D A C E **G B** 1890
 GCAGGTGGCTGTAGACACAGGAGACAAGTTCCGCTTCTTCAGCATGGTGGTGACCTCATGCTCTGGATGGAGATGTATCATCCGGCAGATCGAGGCCCAGGAGAACCCACCGGATG 6120
 R V R L V D T G D K F R F S M V R D L M L W M E D V I R Q I E A Q E K P R D V 1930
 TGTCACTGTGAAGTAAATATCATCAAGGTATCAAGCTGAAATGATGCTGTAATGACAGCTTTACAGCCCTGCATTTAGCTTGGAAATCCCTGCTGGCAGCGGAAACACT 6240
 S S V E L L M N N H Q G I K A E I D A R N D S F T **A** C I E L G K S L L A R K H Y 1970
 ATGCTTCTGAGGAGATCAAGAAAGTTACTCGCAGCTGACAGAGAAAGAAATGATTGACAAAGTGGGAGACCGGTGGAGTGGTTAAGACTCATTTTGGAGTCCATCAGTTCT 6360
 A S E E I K E K L L Q L T E K R K E M I D K W E D R W E L R L I L E V H Q F S 2010

FIG. 2E

CAAGGATGCCAGTGTGGCAGAGGCTTGGCTGCTTGGACAGGAACCATACCTATCCAGCCGTGAATTTGGCCAGAGTGTAGACGAAGCTTATTAAAGCCCATGAGGCHTTTG 6480
 R D A S V A E A W L L G Q E P Y L S S R E I G Q S U D E V E K L I K R H E A F E 2050
 AAAAGTCTGCAGGACCTGGGATGAGAGATTCTCTGCTCTGGAAGGCTGACAGCTTGGAGCTACTGGAAGTGGCCAGACAGCAAGGAAGAAAGAGGGCGGCCACCTTCTC 6600
 K S A A T W D E R F S A L E R L T T L E L L E V R R Q Q E E E R K R R P S P 2090
 CGGACCCAAACACGAAGGTTTCAGAGGAGCTGAGTCCAGCAATGGGATCTTCAAAGCAGACCAAGTTTCCAGAAATGGTTGCCGGCTGACAGGGATCTCCACGGGTAGTTACC 6720
D P N T K V S E E A E S Q Q W D T S K G D Q V S Q M G L P A E Q G S P R U S Y R 2130
 GCTCTCAACGTTACCAAACTACAAAACCTTTAATACGACGACGACGCCAGTACCATTCATGCTGGAATGTGAAGTTCACCTACCTATTTGTCAAGAACCACTCTGTCCACATCCCTTT 6840
S Q T Y Q N Y K N F N S R R T A S D H S W S G M 2170
 GACCTTTGGCTTCACGTCACCGAGTGTAAATTTTACCTTAATTCATAGCTGTCTCTGATTTCATATTTGTTTGCATTTAATTTATGTTTCTTTGGATCCTCATTTGCCCTCAAAGC 6960
 AGCAPACTTAAATTTTGTATTATTATGTGAGCTTTTACTTTAAGATTTTACATGAGTAATCAAAATTAATTAATTAATGATATTAAGCATAATGAATTTAGACTCTTAACAGGTACGGCACACACAAGT 7080
 TAAATAGTACTCTGCTATAGGTGCTATGTTACTTACAAGTATTATTAACCTATTGGCTTCCATTGTATAGTATGTAAGAACTGGTTTGTAAAGGAAGGAAACGTTTACTACTA 7200
 AGGTTAGCCCTGCAGTTGCTCTGGAACATTCATCCATGGAGAATGCATTCATCAACGGCCCCGAAAGAGCTACATTTTGTGGGAAGCTGATAGTTTGTAGGTGCAGGACCCCAATGTTT 7320
 TGAGACCTTTGGGGCCATTTATTTACTTTGTACAGGCCCAATAATCCCTCTCTTTCTGCCAAGTGTAGGCTTCTGTGCCACCAACAGGACACAGGACACGCTGATTGCTG 7440
 CCACCGGCTCTGCTTGGTCAGTGTACCCTGCCAGCTCAGGCTGTGGCAGATGCCAGAGCTCTTACCATCAGTCAGTCTTCAAGGTGTCAAGCTGTTTTCATTTTTTAGGCAA 7560
 ATAGAACAAGCCATTTTGGTTTCATCCCTGATCCTTGATGATAGACTCAATGCCCTGTGCCAGGAGCGCTTGCAGAGGTGTCTTAGCCCTTAGAGGGCTACTTCAGTGTCTCTA 7680
 CTGACAGAAACTCCTGTATCTCAAATGGATCTCGAAGTCTCTAGTAGGAGTCTTAAGGATGACATGTATTTGGGCCCACTAGCAGGGAATGAAGAAACATTTTAAAGAAATCCCTTTTCTT 7800
 AGGAGTAAAGCTGTGTAAGGGGTGACTTCTGTTCTGATCAAAACAGACCAAAACCCCTCATTTACGAAAGCCCTTGCAGACACTCCCTTGTCTCATTTGCCATTTAGATGCTTA 7920
 GTGGAGTCAGAGCCCTGTTTGGTATGTGTTTTCATTCATTCATGATGCAATTTTTTCTCTTTTGTTCAGGATAACATCATATATAGCATCTTGTGTTGTTTTT 8040
 CCTAATCTCTATGAACATATCTATCTACCTGTAAACCGTAGATAGGTATCTAGATAGCAAGCTTTTAAAGCTCTGGGCCACTATGCAATCATTTATTTGGGTCTCTGGCCTTAAACACATC 8160
 CAAATTTATATT (AAAA) 29

FIG. 2F

1	CCTGCGTCCT	TCCTCCTTTT	CCTCCTTCCC	TCCTCCCTCC	CGGGTAATTT
51	ATTTCTAGCT	TCCAGGCAAG	GGCCACACAA	GGAAGGAAAT	CCACAGGGGA
101	TTAGATGCCG	GGGTGGTAAC	TCCACCAGGA	TAGGTTGGAC	TCTGCAGCCA
151	ACTTCCTATC	AGATCACCCCT	GCACCTATTT	CCGACCCGAC	CGGAATGCGA
201	CTGGCTTGAG	GTCCAGCCCT	TTCGCCTGGG	CGGGAGCAGA	GCCGCGGAAG
251	CTFCTTGGAG	TTGGATGGGG	GTAGGAAGGG	GCTGGAGCGG	GAATCCTACG
301	ATGCAACTGG	CCTGGGCCTA	AGGTGTTGGCA	TAATGGAGTT	GCAGAGGACA
351	TCCAGCGTTT	CAGGGCCGCT	GTCGCCGGCC	TACACCGGGC	AGGTGCCTTA
401	CAACTACAAC	CAACTGGAGG	GAAGATTCAA	ACAGCTCCAA	GATGAGCGTG
451	AAGCTGTACA	GAAGAAGACC	TTCACCAAGT	GGGTCAATTC	CCACCTTGCA
501	AGAGTGTCCCT	GCCGAATCAC	AGACCTGTAC	ACGGACCTTC	GAGATGGACG
551	GATGCTCATC	AAGCTACTGG	AGGTCCTCTC	TGGAGAGAGG	CTGCCTAAAC
601	CCACTAAGGG	ACGGATGCGG	ATCCACTGTC	TGGAGAATGT	CGACAAGGCT
651	CTTCAATTCC	TGAAAGAGCA	GAGAGTCCAT	CTTGAGAACA	TGGGCTCCCA
701	TGACATTGTG	GATGGAAACC	ACCGGCTGAC	CCTCGGCCTC	ATCTGGACAA
751	TTATTCTGCG	CTTCCAGATC	CAGGATATTA	GTGTGGAGAC	TGAAGATAAC
801	AAAGAGAAAA	AGTCTGCTAA	GGATGCATTG	CTGCTGTGGT	GCCAGATGAA
851	GACAGCTGGG	TACCCCAATG	TCAACATTCA	CAATTTACC	ACTAGCTGGA
901	GGGATGGCAT	GGCCTTCAAT	GCACTGATAC	ATAAACATCG	GCCTGACCTG
951	ATAGATTTTG	ATAAACTGAA	GAAATCTAAT	GCACACTACA	ATCTGCAGAA
1001	TGCATTTAAC	CTGGCAGAGC	AGCACCTTGG	CCTCACTAAA	CTGTTAGACC
1051	CTGAAGATAT	CAGTGTGGAC	CACCCTGATG	AGAAGTCTAT	CATCACATAC
1101	GTGGTGACTT	ACTACCACTA	CTTCTCCAAG	ATGAAGGCCT	TGGCTGTCGA
1151	AGGAAAGCGC	ATTGGAAAGG	TGCTTGATAA	TGCTATAGAA	ACAGAGAAAA
1201	TGATTGAGAA	GTACGAGACA	CTTGCTTCTG	ACCTTCTGGA	GTGGATTGAA
1251	CAAACCATCA	TCATCCTAAA	CAACCGCAAA	TTTGCTAATT	CACTGGTTGG
1301	GGTCCAACAG	CAGCTCCAAG	CATTCAACAC	GTACCGCACA	GTGGAGAAAC
1351	CACCTAAGTT	TACTGAGAAG	GGGAATTTGG	AGGTGCTCCT	TTTCGCGATT
1401	CAGAGCAAGA	TGCGAGCGAA	TAATCAGAAG	GTCTACATGC	CCCGCGAGGG
1451	GAAGCTCATC	TCTGACATCA	ACAAGGCCTG	GGAAAGACTG	GAAAAAGCAG
1501	AACATGAGAG	AGAACTGGCT	CTGCGGAATG	AGCTCATACG	GCAGGAAAAA
1551	CTGGAACAAG	TCGCCCAGAG	ATTTGATCGC	AAGGCAGCTA	TGAGGGAGAC
1601	ATGGCTGAGT	GAAAACCAGC	GTCTTGTGTC	TCAGGACAAC	TTTGGATTTG
1651	ACCTTCCCGC	TGTTGAGGCT	GCTACCAAAA	AACACGAGGC	CATTGAGACA
1701	GACATCGCTG	CATATGAAGA	ACGAGTTCAG	GCCGTGGTGG	CTGTGGCCAG
1751	GGAACCTGAA	GCCGAGAACT	ACCATGACAT	CAAGCGCATC	ACAGCGAGGA
1801	AGGACAATGT	CATCCGGCTC	TGGGAATACT	TGCTGGAACT	GCTCAGGGCC
1851	AGGAGGCAGC	GTCTTGAGAT	GAACCTGGGA	TTGCAAAAGA	TATTCCAGGA
1901	AATGCTTTAT	ATTATGGACT	GGATGGATGA	AATGAAGGTG	CTATTGCTGT
1951	CTCAAGACTA	TGGCAAACAC	TTACTTGGTG	TTGAAGACCT	GTTACAGAAG

FIG. 2G

2001	CATGCCCTGG	TTGAAGCAGA	CATTGCAATC	CAAGCAGAGC	GTGTAAGAGG
2051	TGTGAATGCC	TCTGCCCAGA	AGTTTGCAAC	AGATGGGGAA	GGCTACAAGC
2101	CATGTGACCC	CCAGGTAATT	CGAGACCGTG	TTGCCCACAT	GGAGTTCTGC
2151	TATCAAGAGC	TTTGTCAGCT	GGCTGCCGAG	CGTAGGGCTC	GCCTGGAAGA
2201	GTCCCGTCGC	CTCTGGAAGT	TCTTCTGGGA	GATGCCAGAA	GAGGAAGGCT
2251	GGATACCAGA	GAAGGAAAAG	ATCCTGTCCT	CTGATGATTA	CGGGAAAGAC
2301	TTGACCAGTG	TCATGCGCCT	GCTGAGCAAG	CACCGGGCAT	TTGAGGATGA
2351	GATGAGTGGC	CGTAGTGGCC	ATTTTGAGCA	GGCCATTAAA	GAAGGTGAAG
2401	ACATGATTGC	AGAGGAACAC	TTTGATCGG	AAAAGATCCG	TGAGAGAATC
2451	ATTTATATCC	GGGAGCAGTG	GGCCAACCTG	GAACAGCTCT	CAGCCATTAG
2501	GAAGAAGCGC	CTAGAGGAAG	CCTCATTACT	GCACCAGTTC	CAGGCTGATG
2551	CTGATGATAT	TGATGCTTGG	ATGTTAGATA	TACTCAAGAT	TGTCTCCAGC
2601	AATGATGTGG	GCCATGATGA	GTACTIONACG	CAGTCTCTGG	TCAAGAAGCA
2651	TAAAGATGTA	GCAGAAGAGA	TCACCAACTG	CAGGCCCACT	ATTGACACAC
2701	TGCATGAGCA	AGCCAGTGCC	CTTCCACAAG	CACATGCAGA	GTCTCCAGAT
2751	GTGAAGGGCC	GGCTGGCAGG	AATTGAGGAG	CGCTGCAAGG	AGATGGCAGA
2801	GTTAACACGG	CTAAGGAAGC	AGGCTCTGCA	GGACACCCTG	GCCCTGTACA
2851	AGATGTTTCA	TGAGGCTGAT	GCCTGTGAGC	TCTGGATTGA	CGAGAAGGAG
2901	CAGTGGCTCA	ACAACATGCA	GATCCCAGAG	AAGCTGGAGG	ACCTGGAAGT
2951	CATCCAGCAC	AGATTTGAGA	GCCTAGAACC	AGAAATGAAC	AACCAGGCTT
3001	CCCGGGTTGC	TGTGGTGAAC	CAGATTGCAC	GGCAGCTGAT	GCACAATGGC
3051	CACCCCAGTG	AAAAGGAAAT	CAGAGCTCAG	CAAGACAAAC	TCAACACGAG
3101	GTGGAGTCAG	TTTCAAGAAC	TGGTGGACAG	GAAAAAGGAT	GCTCTTCTGT
3151	CTGCCCTGAG	CATCCAGAAC	TACCACCTCG	AGTGCAATGA	AACCAAATCC
3201	TGCATCCGGG	AGAAGACCAA	GGTCATCGAG	TCTACCCAAG	ACCTTGGCAA
3251	TGACCTGGCA	GGTGTTCATG	CCCTGCAGTG	CAAGCTGACT	GGCATGGAAC
3301	GAGACTTGGT	AGCCATTGAG	GCGAAGCTGA	GTGACCTGCA	GAAAGAAGCT
3351	GAGAAGCTGG	AGTCCGAGCA	CCCTGACCAG	GCTCAAGCTA	TCTGTCTCG
3401	GCTGGCCGAG	ATCAGTGATG	TGTGGGAGGA	AATGAAGACA	ACCCTGAAGA
3451	ACCGAGAGGC	CTTCCTGGGA	GAGGCCAGCA	AGCTGCAGCA	GTTTCTGCGG
3501	GACTTGGACG	ACTTCCAGTC	TTGGCTCTCC	AGGACCCAGA	CTGCTATCGC
3551	CTCAGAGGAC	ATGCCCAATA	CCCTCACTGA	GGCAGAGAAG	CTTCTCACAC
3601	AGCACGAGAA	TATCAAAAAT	GAGATCGACA	ATTATGAGGA	AGACTACCAG
3651	AAGATGCGGG	ACATGGGCGA	GATGGTCACC	CAGGGGCAGA	CTGATGCCCA
3701	GTATATGTTT	CTGCGGCAGC	GGCTGCAGGC	CTTAGACACT	GGCTGGAATG
3751	AGCTCCACAA	AATGTGGGAG	AACAGGCAAA	ACCTCCTCTC	CCAGTCCCAT
3801	GCCTACCAGC	AGTTCCTTAG	GGACACCAAA	CAAGCTGAAG	CTTTTCTTAA
3851	TAACCAGGAG	TATGTTTTGG	CTCATACTGA	AATGCCCAAC	ACCCTGGAAG
3901	GAGCTGAAGC	AGCCATTAAA	AAGCAGGAGG	ACTTCATGAC	CCACATGGAT
3951	GCCAACGAGG	AGAAGATCAA	TGCTGTTGTG	GAGACTGGCC	GAAGACTGGT

FIG. 2H

4001	GAGCGATGGG	AACATCACCT	CCGACCGCAT	CCAGGAGAAG	GTGGACTCTA
4051	TTGACGACAG	ACACAGGAAG	AATCGAGAAG	CAGCCAGTGA	ACTTCTGATG
4101	AGGTTAAAGG	ACAACCGTGA	TCTACAGAAG	TTCCTGCAAG	ATTGTCAAGA
4151	GCTGTCCCTC	TGGATCAATG	AAAAGATGCT	TACAGCTCAA	GACATGTCCT
4201	ATGATGAAGC	CAGAAATCTG	CACAGTAAAT	GGTTAAAGCA	TCAAGCATTT
4251	ATGGCGGAAC	TTGCATCCAA	CAAAGAATGG	CTTGACAAAA	TTGAGAAGGA
4301	AGGAATGCAG	CTTATTTTCAG	AAAAGCCAGA	AACAGAAGCT	GTGGTAAAGG
4351	AAAAACTCAC	TGGTTTACAT	AAAATGTGGG	AAGTCCTTGA	ATCCACAACC
4401	CAGACCAAGG	CCCAGCGGCT	CTTTGATGCA	AATAAGGCTG	AGCTTTTCAC
4451	ACAAAGCTGC	GCAGATCTTG	ACAAATGGCT	ACATGGCCTG	GAGAGCCAGA
4501	TTCAATCTGA	CGACTATGGC	AAAGACCTTA	CCAGTGTCAA	TATTCTTCTG
4551	AAAAAGCAAC	AGATGCTGGA	GAATCAGATG	GAAGTTCGGA	AGAAAGAGAT
4601	CGAGGAACTG	CAGAGCCAAG	CCCAGGCGCT	GAGTCAGGAG	GGGAAGAGCA
4651	CAGATGAGGT	GGACAGCAAA	GCGGTTACTG	TGCAGACCAA	GTTTCATGGAG
4701	CTTCTGGAGC	CCTTGAGTGA	GAGGAAGCAT	AACCTGTTAG	CTTCCAAGGA
4751	GATCCATCAG	TTCAACAGGG	ATGTGGAGGA	CGAAATCCTA	TGGGTGGCG
4801	AGAGGATGCC	TTTGGCAACT	TCCACAGATC	ATGGCCATAA	CCTTCAAACCT
4851	GTGCAGCTGT	TAATAAAGAA	AAACCAGACC	CTCCAGAAAG	AAATCCAGGG
4901	ACACCAGCCT	CGTATTGATG	ACATCTTTGA	GAGGAGTCAA	AACATCATCA
4951	CAGATAGCAG	CAGCCTCAAT	GCCGAGGCTA	TCAGGCAGAG	GCTCGCTGAC
5001	CTGAAGCAGC	TGTGGGGGCT	CCTCATTGAG	GAAACTGAGA	AACGCCATAG
5051	ACGGCTGGAG	GAGGCACACA	AGGCGCAGCA	GTACTACTTT	GATGCAGCTG
5101	AAGCCGAGGC	ATGGATGAGT	GAACAGGAGT	TGTACATGAT	GTCTGAGGAA
5151	AAGGCCAAGG	ATGAGCAGAG	TGCTGTCTCT	ATGTTGAAAA	AGCACCAGAT
5201	TTTAGAGCAA	GCTGTTGAGG	ACTATGCAGA	GACAGTACAC	CAGCTCTCCA
5251	AGACTAGCCG	GGCGCTGGTG	GCTGACAGCC	ATCCCGAAAG	TGAGCGTATT
5301	AGCATGCGGC	AGTCAAAGGT	CGACAAGCTG	TATGCTGGCC	TGAAGGACCT
5351	TGCTGAGGAG	AGGAGAGGAA	AACTTGATGA	GAGGCACAGG	CTGTTCCAGC
5401	TCAACAGAGA	GGTGGATGAC	CTGGAACAGT	GGATCGCTGA	GAGGGAAGTG
5451	GTCGCAGGCT	CCCATGAGTT	GGGACAGGAC	TATGAGCATG	TCACGATGTT
5501	ACAAGAACGG	TTCCGAGAAT	TTGCTCGAGA	CACAGGAAAC	ATTGGGCAGG
5551	ACGCTGTGGA	TACAGTTAAT	AACATGGCAG	ATGAACTCAG	CAACTCTGGA
5601	CATTCAGATG	CTGCCACCAT	TGCTGAGTGG	AAAGATGGTC	TCAATGAAGC
5651	CTGGGCTGAC	CTCCTGGAGC	TCATTGACAC	AAGAACACAG	ATTCTTGCTG
5701	CCTCATATGA	ACTTCATAAG	TTTTACCATG	ATGCCAAGGA	GATCTTTGGC
5751	CGAATCCAGG	ACAAACACAA	GAAACTCCCT	GAGGAGCTTG	GAAGAGATCA
5801	AAACACTGTG	GAAACTTTAC	AGAGAATGCA	CACCACCTTT	GAGCACGACA
5851	TCCAAGCTCT	GGGCACTCAG	GTGAGGCAGC	TGCAGGAGGA	TGCAGCTCGC
5901	CTCCAGGCAG	CCTATGCAGG	GGACAAGGCT	GATGACATCC	AGAAGCGTGA
5951	GAATGAGGTC	CTGGAAGCCT	GGAAGTCCCT	GCTGGATGCT	TGTGAGGGTC

FIG. 2I

6001	GCAGGGTGCG	GCTGGTAGAC	ACAGGAGACA	AGTTCCGSTT	CTTCAGCATG
6051	GTGCGTGACC	TCATGCTCTG	GATGGAAGAT	GTCATCCGGC	AGATCGAGGC
6101	CCAGGAGAAA	CCACGGGATG	TGTCATCTGT	TGAACTGTTA	ATGAATAATC
6151	ATCAAGGTAT	CAAAGCTGAA	ATTGATGCTC	GTAATGACAG	CTTTACAGCC
6201	TGCATTGAGC	TTGGGAAATC	CCTGCTGGCA	CGGAAACACT	ATGCTTCTGA
6251	GGAGATCAAG	GAAAAGTTAC	TGCAGCTGAC	AGAGAAAAGA	AAAGAAATGA
6301	TTGACAAGTG	GGAAGACCGG	TGGGAGTGGT	TAAGACTGAT	TTTGGAGGTC
6351	CATCAGTTCT	GAAGGGATGC	CAGTGTGGCA	GAGGCTTGGC	TGCTTGGACA
6401	GGAACCATAC	CTATCCAGCC	GTGAAATTGG	CCAGAGTGTA	GACGAAGTGG
6451	AGAAGCTTAT	TAAGCGCCAT	GAGGCGTTTG	AAAAGTCTGC	AGCGACCTGG
6501	GATGAGAGAT	TCTCTGCTCT	GGAAAGGCTG	ACAACGTTGG	AGCTACTGGA
6551	AGTGCGCAGA	CAGCAAGAGG	AAGAAGAAAG	AAAGAGGCGG	CCACCTTCTC
6601	CGGACCCAAA	CACGAAGGTT	TCAGAGGAGG	CTGAGTCCCA	GCAATGGGAT
6651	ACTTCAAAAG	GAGACCAAGT	TTCCCAGAAT	GGTTTGCCGG	CTGAGCAGGG
6701	ATCTCCACGG	GTTAGTTACC	GCTCTCAAAC	GTACCAAAAC	TACAAAAACT
6751	TTAATAGCAG	ACGGACAGCC	AGTGACCATT	CATGGTCTGG	AATGTGAAGT
6801	TCACTACCAT	TTGTCAAGAA	CCACTCTGTC	CACATCCTTT	GACCTTTTGG
6851	CTTCCACGTC	ACCCAGAGTG	TTAAAATTTT	TACTTAATTC	ATAGCTGTCC
6901	TTGATTTTCAT	ATTTGTTTGC	ATTTAATTTA	TGTTTCTTTG	GATCCTCATT
6951	GCCTGAAAGC	AGCATACTTA	ATTTTTGTTT	ATTTATTGTG	A

FIG. 2J

GCGCTGCTCTGTGAGCTGGAGCACAGCGTGTGAGTTGGCCATATTTAAATATTTTCCAAATAGGATCCCTGGCTCCTTCCCTCCTTTTCCCTCCTTCCCTCCTCCTCCCGGGTAATTTA 120
 TTTCAGCTTCCAGGCAAGGCCACACAAGGAAGAAATCCACAGGGGATTAGATGCCGGGTGGTAACCTCCACACAGGCTAGGTGGACTCTGCAGCCAACTTCTCTATCAGATCACCCCTG 240
 CACCTATTTCCGACCCCGACCGGAATGCGACTGCGCTTGAGGTCCAGCCCTTTTCGGCTGGCGGGGAGCAGAGCCCGCGGAAGCTGCTTGGAGTTGGATGGGGGTAGGAAGGGGCTGGAGCGGG 360
 AATCCTACGGTGCAAGTGGCCCTGGGCCCTAAGTTGGCCATAATGGAGTTGCAGAGGACATCCAGCATTTTCAGGGCCGCTGTCCCGGCCCTACACCGGGCAGGTGCCTTACAACACTACAACC 480
 M E L Q R T S S I S G P L S P A Y T G Q V P Y N Y N Q 27
 AACTGGAAGGAAGATTCAAAACAGCTCCAAAGATGAGCGTGAAGCTGTACAGAAGAGACCTTTCACCAAGTGGGTCAATTTCCCACTTCCGAGAGTGTCTCTGCCGAATCACAGACCTGTACA 600
 L E G R F K Q L Q D E R E A V Q K T F T K W V N S H L A R V S C R I T D L Y T 67
 CGGACCTTCGAGATGGACCGATGCTCATCAAGCTACTGGAGGTCCCTCTCTGGAGAGAGGCTGCCCTAAACCCACTAAGGACGGATGGGATCCACTGTCTGGAGAATGTCGACAGGCTC 720
 D L R D G R M L I K L L E V L S G E R L P K P T K G R M R I H C L E N V D K A L 107
 TTCAATTCCTGAAAGCAGAGAGTCCATCTTGGAAACATGGGCTCCCATGACATTGTGGATGGAAACCCACCGCTGACAAACGTTGGAGCTACTCGAAGTCCGACAGACAGCAAGAGGAAG 840
 Q F L K E Q R V H L E N M G S H D I V D G N H R L T T L E L L E V R R Q Q E E 147
 AAGAAGAAAGAGCGGGCACTCTCCGGACCCAAACACAGGAAGTTTTCAGAGGAGGTGAGTCCCAGCAATGGGATACTTCAAAAAGGAGACCAAGTTTCCCAGAAATGGTTTCCCGGGCTG 960
 E R K R R P P S P D P N T K V S E E A E S Q Q W D T S K G D Q V S Q N G L P A E 187
 AGCAGGATCTCCACGGGTTAGTTACCGCTCTCAACGTACCAAAACTTAAATAGCAGACGGACAGCCAGTACCATTCTATGGTCTGGAATGTGAAGTTCACCTACCATTTG 1080
 Q G S P R V S Y R S Q T Y Q N Y K N F N S R R T A S D H S W S G M 227
 TCAAGAACCACTCTGTCCACATCTTTGACCTTTTGGCTTCCACGTCAACCCAGAGTGTAAATAATTTTACTTAATTTCATAGCTGTCTCTTCATTTTCATATTTGTTTGCATTTAATTTATGT 1200
 TTCTTTGGATCCCTCATTGCCCTCAAGCAGCATCTTAATTTTGTATTATTTATTTGTGAGCTTTTACTTTAAGATTTTACATGAGTAATCAAAAATTAATATATAGCATATATG 1312

FIG. 3A

1 TTGGAACAGTTACTTCAGTGGAGGCAGCAGAAATGAGGCTAGTCCAGACTCACAGGAATAGGGTTCCATTCTCAAGAAGATGATTTA
88 AAGTAATTATCCTTTACGCATAGTTATCATCACCACAAAAAAGATTCCAACCTTTTCCACAGAACTATTATGATTTATTTTATAT
175 GAATGTATGTATTTATTATTATATGAACTCCTATAATGATCACCTTTACATATTCACATTTTCTTAATAATTAGTTTAGCCGCGTCC
→ W57358, W47742
262 GGAGGTCCGACAGCTCTGCAGCTCCGAGCGCGGACTAGCCAGAAAGTTTCAGGCCATCCATGAGCCACCAGGAAAGGATTGCCAGC
M S H Q E R I A S
349 CAGAGGAGGACAACAGCCGAAGTCCCAATGCACAGATCAACTGCCAATCAAAGCAAGAGGAGCCGGTCACCATTGCCAGCACACGT
Q R R T T A E V P M H R S T A N Q S K R S R S P F A S T R
436 CGTCGCTGGGATGACAGCGAGAGCTCGGGAGCCAGCCTGGCTGTTGAGAGTGAGGATTATTCCAGGTGGCGGGATGCTGCCGATGCT
R R W D D S E S S G A S L A V E S E D Y S R W R D A A D A
523 GAGGAGGCTCATGCCGAGGGCCTAGCCAGAAGAGGCCGAGGTGAGGCTGCCAGCAGCTCAGAGCCAAGGTATGCTGAAGACCAGGAT
E E A H A E G L A R R G R G E A A S S S E P R Y A E D Q D
610 GCCAGGAGTGAACAAGCGAAGGCAGACAAAGTGCCAAGACGGCGGCGAACCATGGCAGACCCTGACTTCTGGGCATACACCGACGAT
A R S E Q A K A D K V P R R R R T M A D P D F W A Y T D D
697 TACTACCGATACTACGAGGAAGATTCTGACAGCGACAAAGAGTGGATGGCTGCCCTGCGCAGGAAGTACCGAAGCCGAGAGCAACCC
Y Y R Y Y E E D S D S D K E W M A A L R R K Y R S R E Q P
784 CAGTCTCCAGCGGAGAAAGCTGGGAGCTTCTGCCAGGAAAGGAAGAAGTGGAAAGTTCAGCAAGCCGGAGCTGGGAGCCTCGCCAGT
Q S S S G E S W E L L P G K E E L E R Q Q A G A G S L A S
871 GCTGGCAGCAATGGCAGTGGTTATCCTGAAGAAGTACAAGACCCATCTCTTCAGGAGGAAGAACAGGCCTCTCTGGAAGAAGGAGAA
A G S N G S G Y P E E V Q D P S L Q E E E Q A S L E E G E
958 ATCCCTTGGCTTCGCTACAATGAGAATGAAAGCAGCAGCGAGGGTGATAATGAGTCTACCCATGAGCTCATACAGCCTGGGATGTTT
I P W L R Y N E N E S S S E G D N E S T H E L I Q P G M F
1045 ATGCTGGATGGAACAACAACCTGGAAGATGACTCCAGCGTGAGCGAAGACCTCGAAGTGGACTGGAGCCTGTTTGATGGGTTTGCC
M L D G N N N L E D D S S V S E D L E V D W S L F D G F A
1132 GATGGCTTGGGAGTGGCCGAAGCCATCTCCTACGTGGATCCTCAGTTCTCCTCACCTACATGGCTCTGGAAGAGCGTCTGGCCCAGGCA
D G L G V A E A I S Y V D P Q F L T Y M A L E E R L A Q A

→ clone CH7

FIG. 3B

1219 ATGGAGACGGCCCTGGCACACTTGGAGTCTCTCGCCGTTGATGTGGAAGTGGCCAAACCCACGACGAAGCAAGGAGAGCATTTGATGCC
M E T A L A H L E S L A V D V E V A N P P A S K E S I D A

1306 CTTCCGTGAGATCCTGGTCACCGAAGATCATGTGGCAGTGGGCCAGGAAATGTGCGTCCCTATCTGCTGCAGCGCAATATGTGAAGGGG
L P E I L V T E D H G A V G Q E M C C P I C C S E Y V K G

1393 GAGGTGGCAACTGAGGTACCATGCCACCACCTATTTCACAGGGCTGGCTGCCATGTGGCTTCAGAACTCTGGGACCTGCCCACTG
E V A T E L P G H H Y F H K P C V S I W L Q K S G T C P V

1480 TGGCGCTGCATGTTCCCTCCCGCTCTAAAGCCAAGGCTGCTGTAACAGTCAGCTGCTGTTACATTCCCTGTCGAAACCCACAA
C R C M F P P P L *

1567 TACTACAGGAGCCCTGTTCTTAACTTACAATGAACCAGTCAGTCAATTAGACTAAAGTTGTTGATTCCCTTGTGATTATTGGATG

1654 TGAAAAATGGTTGTGTACAATGACATTAAAAAAATCATCCCTGTTTAGAAGGTAGAAAAGGGGAAAGGAAACITTTCTAAATGCT

1741 GCCTGAGATTGCAGTAAGAACAATACATTTCTAACCTGAAAGTTGAACAAATCCACCTGTTCTGTAGACTGTCTCTCTTACCT

1828 GTTGCTGTCAAGGTACCTATCTGCTAAACTATGTGCGAAAGACAAATTAATTTGTTGTCATGTCATGGGTTAATGTTCCCTGTATT

1915 TGCAGTGGTGTAAGCTTATTAAAGTTCTTCTTTTGTGTTTGCACCCCGAA
← primer DI

FIG. 4A

1	GGGCAACTGA	AGGCAGATGA	AGAGCCCTGC	CCCTGCCCAC	ATGTGGAACC
51	TTGTGCTGTT	CTTGCCTTCA	CTGTTGGCTG	TGCTTCCGAC	CACTACTGCC
101	GAGAAGAATG	GCATCGATAT	CTACAGCCTC	ACGGTGGACT	CCCGGGTCTC
151	TTCCCGATTT	GCCCATACTG	TTGTCACCAG	CCGGGTGGTC	AACAGAGCCG
201	ATGCTGTTCA	AGAAGCGACC	TTCCAAGTAG	AGCTACCCAG	GAAAGCCTTC
251	ATCACCAACT	TCTCCATGAT	CATCGATGGC	GTGACCTACC	CAGGGGTTGT
301	CAAAGAGAAG	GCCGAAGCCC	AGAAACAATA	CAGTGCCGCC	GTGGGCAGGG
351	GAGAGNGTGC	TGGCATCGTC	AAGACCACTG	GGAGGCAGAC	AGAGAAGTTT
401	GAAGTGTCAG	TCAACGTGGC	CCCTGGTTCC	AAGATTACCT	TCGAATCAT
451	ATACCAGGAA	CTGCTCCAAA	GGCGACTGGG	AATGTATGAG	CTACTCCTCA
501	AAGTGAGGCC	TCAGCAGCTG	GTGAAGCACC	TTCAGATGGA	CATCTACATC
551	TTTGAGCCTC	AGGGTATTAG	CATCCTGGAG	ACAGAGAGCA	CCCTCATGAC
601	CCCGGAGCTG	GCAAATGCCC	TTACCNCTTC	ACAGAACAAG	ACCAAGGCTC
651	ATATCCGGTT	CAAGCCGACG	CTCTCCCAGC	AACAGAAGTC	TCAGAGTGAG
701	CAGGACACGG	TGCTGAATGG	GGACTTCATC	GTCCGCTATG	ATGTCAACCG
751	GTCTGACTCT	GGGGGCTCCA	TTCAGATTGA	GGAAGGCTAC	TTTGTGCACC
801	ACTTTGCTCC	AGAGAACCTT	CCTACAATGT	CCAAGAATGT	GATCTTTGTC
851	ATTGATAAAA	GCGGATCTAT	GTCAGGCAAG	AAAATCCAGC	AGACCCGAGA
901	AGCCCTAGTC	AAGATCTTGA	AAGACCTCAG	CCCCAAGAC	CAGTTCAACC
951	TCATTGAGTT	CAGTGGGGAA	GCAAACCAAT	GGAAGCAGTC	ACTGGTGCAA
1001	GCGACAGAAG	AGAATTTGAA	CAAGGCTGTA	AACATATGCTT	CCAGGATCCG
1051	GGCTCACGGA	GGGACCAACA	TCAATANTGC	AGTGCTGTTG	GCTGTGGAGC
1101	TGCTGGACAG	AAGCAACCAA	GCTGAGCTAC	TGCCCTCGAA	GAGCGTCTCC
1151	CTTATCATCC	TGCTCACGGA	CGGTGACCCC	ACTGTGGGAG	AAACCAACCC
1201	CACGATTATC	CAGAACAACG	TGCGGGAAGC	CATCAATGGG	CAGTATAGCC
1251	TCTTCTGCCT	GGGGTTCGGC	TTTGATGTGA	ACTATCCTTT	CCTGGAGAAG
1301	ATGGCACTGG	ACAATGGTGG	CCTGGCCAGG	CGCATCTATG	AGGATTCAGA
1351	CTCTGCACTG	CAGCTTCAGG	ATTTCTACCA	CGAAGTAGCC	AATCCACTGC
1401	TCTCATCAGT	GGCCTTCGAA	TACCCCAAGT	ATGCTGTGGA	GGAAGTCACT
1451	CGGTACAAGT	TCCAACACCA	CTTTAAGGGC	TCAGAGATGG	TGGTGGCTGG
1501	GAAGCTCCAg	GACCAGGGTC	CTGATGTCCT	CTTAGCCAAA	GTCAGTGGGC
1551	AGATGCACAT	GCAGAACATC	ACTTTCCAAA	CGGAGGCCAG	cGTAGCCCAA
1601	CAAGAGAAGG	AGTTTAAGAG	CCCCAAGTAc	ATCTTTCACA	AcTTTATGGA
1651	GAGACTGTGG	GCAcTGCTGA	cTATACAGCA	ACAGCTGGAG	CAGAGGATTT
1701	CAGCGTCAGG	TGCCGAATTA	GAGGCCCTCG	NGGCCCAAGT	TCTGAAcTTG
1751	TCACTCAAGT	ACAATTTTGT	CACCCCTCTC	ACGCACATGG	TGGTCACCAA
1801	ACCTGAAgGT	CAAGAAcCAAT	TCCAAGTNGC	TGAGAAGCCT	GTGGAAGTCG
1851	GTGATGGCAT	GNAGAGACTC	CCCTTAGCAG	CTCAAGCCCA	CCCCTTCAGG
1901	CCTCCTGTCA	GAGGATCTAA	ACTGATGACC	GTGCTGAAAG	GAAGCAGGTC
1951	CCAGATACCC	AGACGCGGTG	ATGCCGTTAG	GGCATCTAGG	CAATACATTN

FIG. 4B

2001 CTCCCGGATT CCCC GGACCT CCTGGACCTC CCGGATT TCC TGCACCCCT
2051 GGACCTCCTG GATTNCC TGC ACCCCCTGGA CCTCCTCTTG CTTCCTGGCTC
2101 TGACTTCAGC CTTCAGCCCTT CCTATGAAAG GATGCTAAGC CTGCCCTCCG
2151 TTGCAGCACACA ATATCCTGCT GACCCACATC TGGTTGTGAC GGAAAAAAGT
2201 AAAGAAAGCA CCATACCAGA GGAATCCCCN AACCCAGACC ACCCCAGGT
2251 TCCTACTATT ACCTTGCCGC TTCCGGGATC CAGTGTGGAC CAGCTCTGTG
2301 TGGATATCTT ACATTCTGAG AAGCCCATGA AGCTGTTCTG AGACCCACAGT
2351 CAGGCTCTGG AGGTGACTGG TAAGTATGAG AATACTGGGT TCTCGTGGCT
2401 CGAAGTGACC ATCCAGAAGC CTCACCTGCA GGTCCATGCA ACCCTGAAC
2451 GACTGGTGGT GACACGAGGC AGAAAAACAA CTGAATACAA GTGGAAGAAG
2501 ACGCTGTTCT CTGTGTTACC TGGCTTGAAG ATGACCATGA ATATGATGGG
2551 ACTCCTACAG CTCAGTGGCC CAGACAAAGT CACCATCGGC CTCCTGTCCC
2601 TGGATGACCC TCAGAGAGGA CTAATGCTGC TTTTGAATGA CACCCAGCAC
2651 TTCTCCAACA ACTGGAAGG GGAGCTTGGT CAGTTTACC GGGACATCGT
2701 CTGGGAGCCA CCCGTCGAGC CAGATAATAC AAAACGGACA GTCAAAGTTC
2751 AAGGAGTTGA CTACCTGGCT ACCAGAGAGC TCAAGTTGAG TTACCAAGAA
2801 GGGTTCCCAG GAGCAGAGAT TTCTTGCTGG ACAGTGGAGA TATAGAACTG
2851 TTAGGAGCGC CGCTCCCTGC CATGTTGTCC TCGTACGCAG GCAGATGACA
2901 CCTTATGCCA ACAGGGACGC CTGTGAGGCC GAGACCTTGA TGGGAAGAGG
2951 ATGCTCCCCTT GTTACAAATA AAGAGGGCA GTGTGAACCC GA

FIG. 5

GGTGGCCAAGAGCAGTTCACCTGCTCTGGGGCAAGCCTTGCTTGTG
TTTTAGTGAGTCAGGGCCTCCCCAGGCAGTAAGATGTTGAGTGTGG
AGGCCCAGGCCGCTGACCTGCAGCCCTGTCCCCCACAGGCAGGCTG
CATGCTCTTCCCCCACATTTCTCCTTGCGAGGTGCGCGTGCTCATG
CTCCTGTACTCGTCTAAGAAGAAGATCTTCATGGGCCTCATCCCCT
ACGACCAGAGCGGNTTCGTCAACGCCATACGACAGGTCATCACCAC
CCGCAAACAGGTGTGCCAGCTGAGGGTAGNCTGCTCCTGCTCCTAC
CCTTGGTAGACCCACTGNCTCCCCTGGTGTGGAATGTGGCATCAA
GGCTGAGTCGGCGNCTGGGGAGGAGCTGTGACGANGCAGTGCCATA
CCCAAATGGGCTCGAGGGAAACNTAGCTTTATAGGGTTTCAGAGGGG
CAGAACTAGAGGGTGGGGCCTGGGTGTAGAGGCAGGGCAGGAGTGG
GGTGGCAGGTTTGGCAAGAGGCCCAGAGTCTCTGGAGGGTTCACAGT
GTTGATGACATCTTTCTNAGAANCCTGCTACTNGCTTAGNCAGCTG
TGGTCCTCTCTNCCACCTGGGGGATACCTGGGCNACAGGCNGTGGGC
NNCGGGGGTGAANACTCTGGACCTGTTNAGANTGTCAACAACAAAT
TCTTGACATGGAGTGGTGTTCATGGAGTGGNAGGAGGTGANCTGCCG
GGGACTGTGTGGACTGTTGNCCCTAAGCTGCCCTCCCCTGAAGTGC
CTTCTCGCTCTGCCCCAAAACCCAGACCTGAGCCCAACAGCCGGTC
CAAGAGGTGGCTGCCATCCCACGTCTATGTGAACCAAGGGGAGATC
CTGTGATTCCGGGTACCCCCGGGTGGCCCCATTGACAGTGCCGCCC
CCCTGGGGGAGGACTTCTGACTGATACCTCCTGTCTTGTGTGGCAG
GAGAACAGACCAGTGGCCTCGGAGGCTCTTCATGCAGCTCATTTCC
CAGCAGTTGCTGGTGAGGGGTTCAGGGGATTCCAGGCTGGGGGTGGG
CCAAAGACCCTGTGGTGGGCTGGTTCAGAGGCCTGCCTGGCTTCCC
CAGCAAGCTAGGGTTCCATAAAGAAGCCCTCGGCCTTCCCCCAGAC
CACCTCGTGCCACTGTTCCGGAATTC

FIG. 6A

GGCACGAGCTTAACTGTGCTAACTTCTGTGATGATCATGTGTGATGAGTATGTGCTCT
CATTTGATTTGTGGGAAAAAGAAAAGAAAAAATCCGAAGGACACAAAGAGGACT
AATCTTAAACCAGATATCTAGTAGTCACCAAAGCCACACTTTGAATTCGAAAAGCTT
AGCACTGTAGCTTAGCTCATGCTATCTTTTAAAGAGAGAATTTAATTATTTAATATAT
GGAAGGACATTAGGCTAGTGTGTCTGGCACATGGTATAAACTCAATAAATGGTGGAC
GTTATCAGTGTACTATAATGAGTTTAATAATTTGGTTTCATCTCCTTTAATCAGACC
AGTGTTCACTACTAGCTGGGTCTCTGGAATAGGCACAGATATATTCATCTGGAGTGTCT
ACACATACTCTGTGCGCGAAAGAGTTCAGAATAGCCCTTCAATAAGCCAATTACTCTT
GCTGTCATCCTTATTTCTTAACTTTCCCTTAGCGTTGCTTTTATGTATCAAACCTTTCT
TCCTTATTTTACGTAATACTTTTAATGACAACCTTTCTAGAAATAAGAACTATAACCCTA
AAAGATTGAAATATTCTTAGTTTTCTTTATCTACATCAGAAATTGTTTAGCTGATACA
ACATACTTATATTGTTTAAGGAATTCTGTTTAATACCTTGGTATTTATAATTTTCATAA
GTTTATTTGTATTAATAGGAACTCTTACAAAGAATGTATAGAAAATAAGCCCCATCAT
TTGTCAGTGTGACAATTTTCCCAGTGTTTAAATTGTTTAAGCTGTTTGTACCCCTATAT
AAGCTCTGTTCCCTTCTTTGGCCCTTTCCCCCTTAGCCTAAATCTCCATTTTGCCTGACG
ATCTCTTCCCTGACAAAATGCCTGCTTCTGCGCACTGAGTCACAGTCTACTAAAATGC
ATTCCATTGTGCCCATGTCCCTCTTAATGTGATGACCCAGACATGACCAGGGCAGAG
CACAGAGGGAGCATCACTTTCTTTGACCAGAGCATCTATTTCCAGCAATGCAGCCTA
AGGTCACATTAGCATTTTTTGGCAGCAAAATACACCCTTGGCTCATGCTGTTATGCTGT
CAACCAAATCCTCCATGACTTTTTTACATGAACTCCCATTAATAAGGCTTCCACAT
CCGGTACGAATATAGACAGTAATGTGCAGTCTGGTGAAGTTATTTACATAAGTTCCTA
TTAAACATCAGCTAATCTATATTTATTATTTTAGAATATTGAGACAGATTTCTATTCC
CAGCTATATAGATATGGTTTTAGAACTTTATTATTATTTTTTTTAAATGTGTCTTCTCT
GAACCCGATAAGAACATAGTCCCAGACAATCTTTAAGTTCAGAGTCTTACAGTTTGT
ATAGAGACCTAGAGGCTAGCTATATTTCTTTAGACATCAACACATCATCAGATAGGA
TCCACCCAAGGCCTTACAAATCCTGTATACTGAAATGCCTTTTCTGACGATATTCT
GGAGACTGTTAAGTGAATGCGCAGATCTGAACCGAGCCGAGCCTGTAGTGGGGAAGA
GCTAAAGCATGGCAGTTGTCTTCATCAATGATGGAGTCTTTCATTATGTTGTCTCAAA
AGACACATGCTTCAGCCCTGGGTCTCAAACTCTCATGCTTCGGCCCTGGGTCTCACA
CTCCTGGCTTCCCGAGTGGTCATAGCTAAGACCTTCTCACACTAAATCCCAGGATGAG
CTCATGTTGATGTTCCCTGCTTGCTTCTCTGAAATTGGCAGTTCCTGTTGGGAAAAAAA
TCTACTTATACTTGTGTGCTTCATAAAGCAACTCGGTAGCAGGGCTTAGGGGTGCTTC
GAGTGTGGCAGTGATAGAGAAGACCGATAAAGCGAAATCTATGATATCTCATAACATC
ATTTTAATTATTTAAATTACTTTTGTAGTACACAAAAGTATTTGTTAGTACACCCTG
TTTATCTATGTGTATACTCTACCTTTCGCATACACTGACTTCATTTCTTTTTCTCCTCA
CCCATCCTGATGAGCTGCTCTCCTCCCAGACAAGCTCTGGCAGTTTTTAAAGTCACGTG
TGTATCTTTTAACTCTAGCTTCTGCCTATTAGACAAAACAAGATACTTGTCTTTCTCCC
CATCTCCCTCCTTTTGTTTAATTCTCCTCCAGCCCTACATGGATCCCCCTTGACCTCGT
GTCATATATCTAAATCTGTATAAATAAAGAGATGATTTAATCTACGTTCTATGTACAA
AAGAGAATATAAATGCTCGTCTTTCTGAATCTGTCTTATTTGGTTTCACACAATATCT

FIG. 6B

GCTCTCTTTTACCGCAAATGGTATCATCTCGTTCCTTTACACGTTGAAGAAAATTC
ATTTTGTGTGTGTGTGTGTGTGTGTAAGTAATAATTTTACGCTATCTGGTG
AGGAACATCAAGGCCAAGATATGGATCTTGGCTATTGTAAAGAGTGTAGTAAGAAAC
ACAACCGTATAATCATCTTCTGTGTCATGCTGGCATGCTGGCTACAATCCTCACCTGTG
TACCCAGAGTGAGAGCTGGACCACATGGTAATGCAACCTGTAGTTATTTAATGT
GTACTTCTTGTAAATGTTAAAGATACTACTTATTTTAATGTTATGTGTATGGATGTT
TTATCTATGTGTTTGTCTGTATATAGTGGGCCACGTACTGGTCTCAGAGCCAGAGGAAG
GCATCAGAGTCCCCGGGTTGGAATTAAAGATGTTTGTGAGTACCCTGCCGTATCCCTG
GACTTCAAACCCGGGCTTCTTCAAGAGCAGCCAGTCTCTTAACCACTGAGGATCTC
TCCAGCCCTCATCGCTGATTTAGGAAGGACTTTTACTGATTTGGAGTAGCTGTAGGCAA
TGCAGTCTATGACGATTTCCCTTTTAGCAGTCTCTGTTTCTTAAATGATAGCCATA
CTGATTGCTGAGATTTACAGCAGCACTAGCAAGCTGGAA

FIG. 7

CTCGAGTTTTTTTTTTTTT GGAGAAAGGNAACATTTATTCATTC 50
AACAAATNTTGATGACCTGATGGGNAGATAACTGAGCTAGTCAGCGCGT 100
AGGTAGCAAAACATAAGGNTATAGTACCCAGNTAATGGTCTNCCCACATG 150
TCACTGAAGGAGTGTCAGTTCTCAGCATTTTACCTTTAAATTTTAAATTTT 200
ACCTCTAAATGCGCTTAGGAGGCTACCCACAGTTGATGACAAACAGTGT 250
AGCCAGGCATGCCAGAACTGTTACCCAGCAGAACTTTTGGCCGACTGTAGC 300
TGGCAGTGTCTCAGTAGTGCAGTTTCATGCCCTGGTGGGTGTAACTAGGGT 350
ACAACGAAGTCACCTTTGAACTCTTTTGTGCTAACTAAATAAGCCAAATAAAC 400
AAATCATGAAATACTGATTAGCAATGCAATATTTTCATGGCATGGGAAGAG 450
CTTCGACTTCTCCATCGGTGACAAAGGAGCAGCTTCTGGAAGGAAGGTCTG 500
GAGAAACAAGTGACGGGAGCTCCGAGGAGCCCTGAACACGTCACCTCAA 550
CAGCACTGGCGTTGACACACAGCTGCTGTGGTCCAGCAGTCACTCAGTGGAG 600
AGTGCCAAAGGGTGGCAGACAGNCAGNCCCTACTTCTTCATCTCCAGGAT 650
GGCACTTCCAGGCCACCGGTTCTTAGCACTACAGATGTTGCAGTATTGTG 700
CAGGAGCATTCATGCTCGGCATAGGCAGGCACTCCTTGTGGAACATGTGC 750
CGGCAGTGAAGACCCACCGCTGAAGGCTTCNCTGCATCTGTTGGGAG 800
GATGGAGAAAGGCATGATTCACAGATATTCTCTTTCATCAACCAGAACGC 850
CTTTCAATTTGGGTTCCGNGCATTTTTTTCACACACCAACGACAAATGAGTCA 900
GCTACGAGGATTTTCTTGCCAGCCTTCCCGAAGCAGAAATCTTCAAGTTATA 950
ATCTTGCAGAAATTTTAAACCAAGGAATCTCTCAAATTGGGAATCTCCATTC 1000
CTTCCCTTAAATTCGGTGGATAAGTAGAATCGGGTCCACATGTGTGCCAATG 1050
TTGTTCAACAAGCCAGTGATAAATGGTGGTTTGTCTGATGGAGTATAGAAT 1100
CAGATCTTCTCGTGCCGAATTC 1122

FIG. 8

CTCGAGAGATGCCCCACAGTCCCTCAGGACCCGAGTCAGGTAATCTGCCT 50
TTGGCCCTTAGTGACCTCCTTTTCTGGCGAGTATACCATCCACTTTCCTC 100
CCTGACAGGCAGTTCAGTAACCCAAACCCTTTCATTCCCTCCTCAGTTGTC 150
AAAGACAAGTTAACATCCAAGACTAACAGCAAGATGACTCAGGAGCATG 200
GNCTCTGGGTTCCCTGGCACCATGTCATGGTGATGCTAGTTAAGGCTGAC 250
TTAGCTCTTAGCAACCTTGGTTGGGATAGCTTAAGCTCATCTCCACTTTC 300
CTACCAAAACAGAAAAGAAATTTGAGTCCCTCTTGCTATGAGGCTCTCGCTCC 350
CATCTCAGGCGAGCTTCCCTGCCCTCACCCAAAGCTTGGGAGGTAGAGTTA 400
TGGAGAGGGCAAGGAAGCAGGACTGGAAAAGATAGACTTATGGATCCACCA 450
CTCATAAAGTCACAAAAGTCCCCCTCACACCTGCTAGACTTAGACTCTAAAT 500
CATTACGTTGTCACCAACAGAGGTGACTCCTCAACCACAGAGCCTGTAG 550
TGAGCTTCAAGAGAGAAGAGGACAAGNCAGACCTGGACTGCATGACCTTG 600
CACCTGTGATGAAGTCACAGCAATAGGTGATGCTCAAAAAGCCCCAATAA 650
AATGCAAGACAGNCAACAGAGCCCTGTCTGTCCCCCATTTGGTGGGTAAT 700
GTAGCTGATGTGGCTGGTTCTCCTTCCCTTGACTTCACCCCTGACTATGGGA 750
ATTGTCCCTTCAGTGCCCTCGTGCCCGAATTC 779

FIG. 9

```
CTCGAGAGGTGAAGGCAGAAAGTATCACAAGTTCAAGTTC AAGGNCAGCCT 50
GGCTTCACAAGACCCAAAATAAATATGAGGNCAGTCCAGGCTGGGA 100
CTCAGGTCAC TGTGTGCTGAGCCATCGTCAGAGAAAGTTTCTTNNNT 150
TTTGATAGGAGCTAACACAGCGACCCACANCTGGACAGNCTGCAGTGAGT 200
GAGTGAGTAAGTGACCTAAAGTGATGTCCTTCAATTAATCTCCCCCTCCCCA 250
GGCNTCAGGGAGCTCTGAGGAAGAGGAGGCAGAAAAGATGGTGAGAGCCAG 300
CAGGGATGGAGGACACCAAGGAAGCAGTGTCTCCGACACACAGGACTG 350
GCATTTAGGAAGTCACAGAGGCTGTGGCTGCCAGGGCTGCACGGTCCA 400
AGCTGGCTGAGATTCCAGTGTGAGAGAGACAAATTCAACACGGNCTCCCA 450
CCCCTAGNCAAGAAGTTATCTCCAAC TGTATATCCACTTGCAAAGGAAAAA 500
ATTAGGGGGNTAGAGAGATGGCTCAGTGGNTAAGAGCACTGACT . . . . . 544
. . . . . 600

. . . . . TANAAAAATAGAAATNGCANATTNGNTNNGANGTTNGCNA AATNGC 1200
TGAGAAATGGCCAAATTGGCTGGAAAAC T TGCAACAT TGCCCTGGAGAACTG 1250
CCAAATTGCCCTGGAGAGCTGCCAAAT TGGCCTGGAGAGCTGCC TACATGG 1300
CCTGGAGAGCTGCCCACATGGCCTGGAGAACTGGCTACATGTCTCTGGAGA 1350
GCTGCCAACATGTCTCTGGAGATCTGCC TACATGGCCTGGAGAACTGCCCTA 1400
CATGACCTGGAGAGCTGGCCACATGGCCTGGAGAGCTGGCTACATGACCT 1450
GGAGAGCTGNCTACATGGCCTGGAGAGCTGGCTACATGGCCTGGAGAGCT 1500
GGCTACATGGCCTGGAGAGCTGGCTACATGGCCTGGAGAGCTGGCTACAT 1550
GGCCTGGAGAGCTCCAGCAAGGCCCTCTCTAAGCCGAATTC 1592
```

FIG. 10

```
CTCGAGATGCATTAAAGCTTTGNTGCAGAAAGGATCCGAGTGTGTCCCTGTG 50
TGTGTGTCCTCACTGGCGAGACCCCTTTATCACACAGGGACACCCCTTAGG 100
TTGGAGTTTTCCTTGTAAATGTCCACTATACGTCCTGCTTTATACAAATA 150
TTGNTTAAATTTGNCCTCTATCATGAAATACCTCACCTTCCCTTATCTGTAT 200
TGATTGAAAGTTTGTGGTGATGTAATAGTTTGGGCTTGGATCTGAAGTCT 250
TTTAGAGTTTATTGGACATGTGCCCTNGATTTCATTGGNTTNAAAATCNTCC 300
ACNACTTGGGGGTGTAAGGTTACCCACNCNATTAANTGGAGGTTCTTCTG 350
AGTTCAGAGANAANGANTGAGCCACCNGGAATTCT..... 400

.CCCTAAACACACTTTGATCATTTCTCTGCCCTAACCCTCAGAGGAAATAT 1550
TAATACCCCTGTAGTACCAAGGAAACAATAAGAGGAGACTGNTCTCT 1600
CATGTCTGGAGGAAGTTTGGTGAAGGAGTCTTCTGTTTGCTCACATAGGA 1650
GAGATCTAATACAGCCACTATCCATAATTAAAAATCTCTGTGAGAGAGGC 1700
ATGACGAGGTTCTCCCACTCTGTCAAGGATGTGAATATGTGTTNCCCCTG 1750
```

FIG. 11

GAATTCNGCNTTGGGGTACATGGACCCGAGAGCTTGGNTACATGGCCCTG 50
GAGAGCTGGNTACATGGCCCGGAGAGCTGGTTTNATAAACCTGGGGANGT 100
TGGGTNAAATGGCCCCGGGGANGTNGGTTNAAATANACCCGGGGAGG... 146
.....TGTCCTGAAAAANAGTGGNCACGTACT 200
GTTCTCAGACCCAGNGGAAGNCATCAGAGTCCCCCTGGGGTTGGAATTAAA 250
GATGTTGTGAGTCNCCTGCGTGATCCTGGACTTCAAACCCGGGCTTCT 300
TCAAAGACAGCCAGTGCTCTTAACCACTGAGGGATCTCTCCAGCCCTCATC 350
GCTGATTTAGGAAGGACTTTTACTGATTTGGAGTANCTGTAGCCCAATNCA 400
GTCTATGACGATTTCCCTTTTAGCAGTCTTGTTCTTTCTTAATGATAG 450
CCATACTGATTGCTGAGATTTACAGCAGCACTAGCAAGCTGGAACCTCGAG 500

[illegible]

- EMBRYONIC LIVER FODRIN OR BETA SPECTRIN, *elf* 1,2 & 3
- SPECTRINS ESTABLISH AND MAINTAIN EPITHELIAL MEMBRANE SKELETON, CELL POLARITY, SPECIALIZED-CELL DOMAINS: AE2

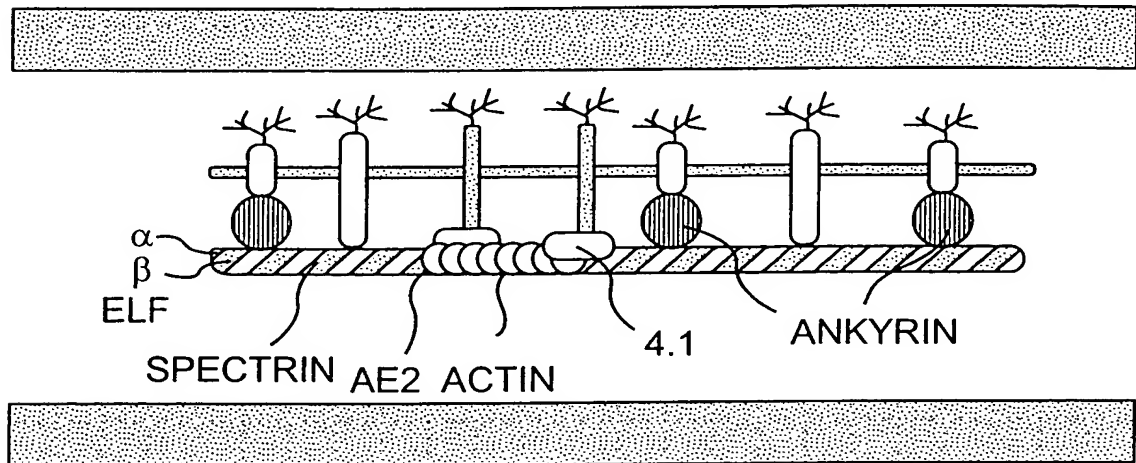


FIG. 13

GRAPHIC REPRESENTATION OF KNOWN ALTERNATIVELY SPLICED PATTERNS FOUND AMONG *elf* TRANSCRIPTS

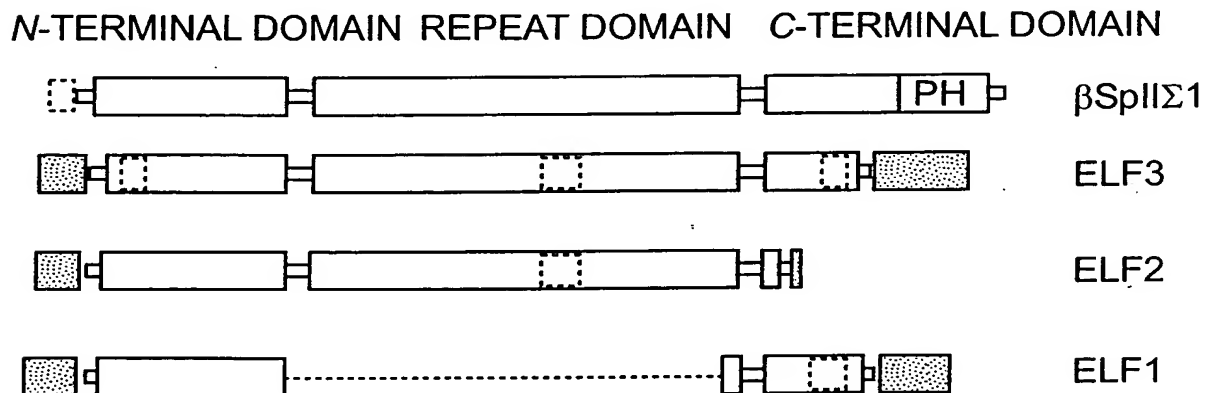


FIG. 14

ELF LABELING IN
PRIMARY BILLARY
CIRRHOSIS



FIG. 15A

ELF LABELING IN
PRIMARY BILLARY
CIRRHOSIS

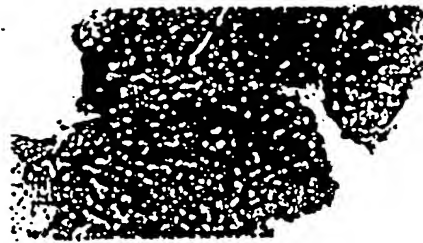


FIG. 15B

ELF LABELING IN
PRIMARY BILLARY
CIRRHOSIS



FIG. 15C

ELF LABELING IN
PRIMARY BILLARY
CIRRHOSIS



FIG. 15D

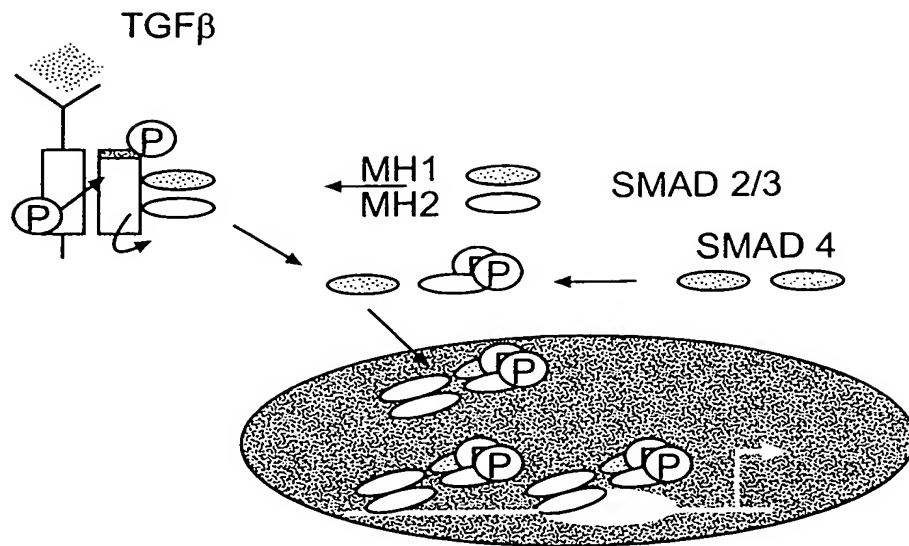


FIG. 16

α -FETO PROTEIN LABELING CELLS OF HEPATOCYTIC
LINEAGE IN WILD TYPE VS. SMAD2^{+/-} SMAD3^{+/-}

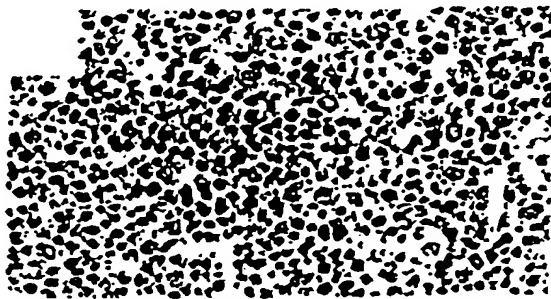


FIG. 17A

α -FETO PROTEIN LABELING CELLS OF HEPATOCYTIC
LINEAGE IN WILD TYPE VS. SMAD2^{+/-} SMAD3^{+/-}

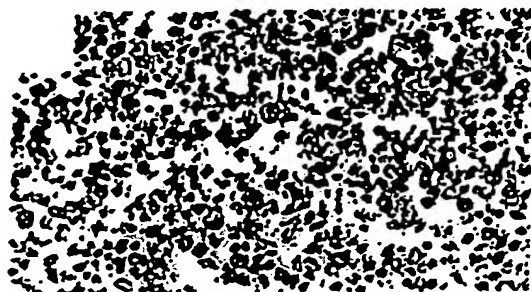


FIG. 17B

SMAD 2 & SMAD 3 MUTANT EXPLANTS SHOWED INCREASED
APOPTOSIS AND VERY FEW VIABLE HEPATIC TISSUE

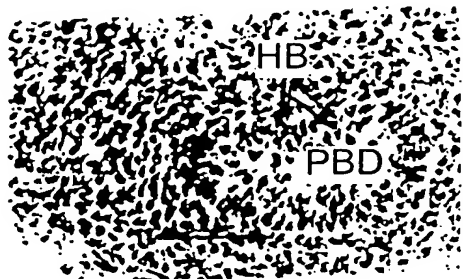


FIG. 18A

SMAD 2 & SMAD 3 MUTANT EXPLANTS SHOWED INCREASED
APOPTOSIS AND VERY FEW VIABLE HEPATIC TISSUE



FIG. 18B

HGF TREATMENT RESCUES PHENOTYPE OF MUTANT LIVER
EXPLANTS AS SHOWN BY CYTOKERATIN LABELING

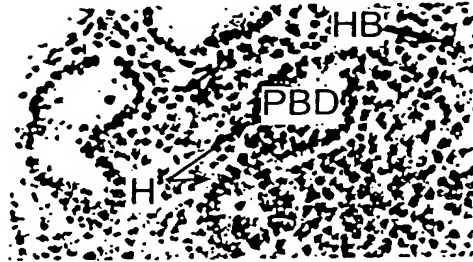


FIG. 19A

HGF TREATMENT RESCUES PHENOTYPE OF MUTANT LIVER
EXPLANTS AS SHOWN BY CYTOKERATIN LABELING



FIG. 19B

HGF TREATMENT RESCUES PHENOTYPE OF MUTANT LIVER
EXPLANTS AS SHOWN BY CYTOKERATIN LABELING

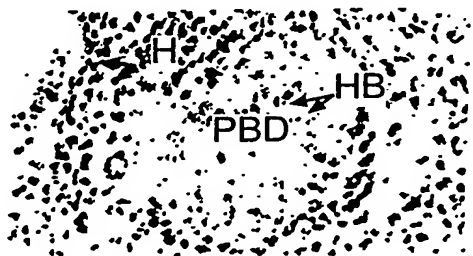


FIG. 19C